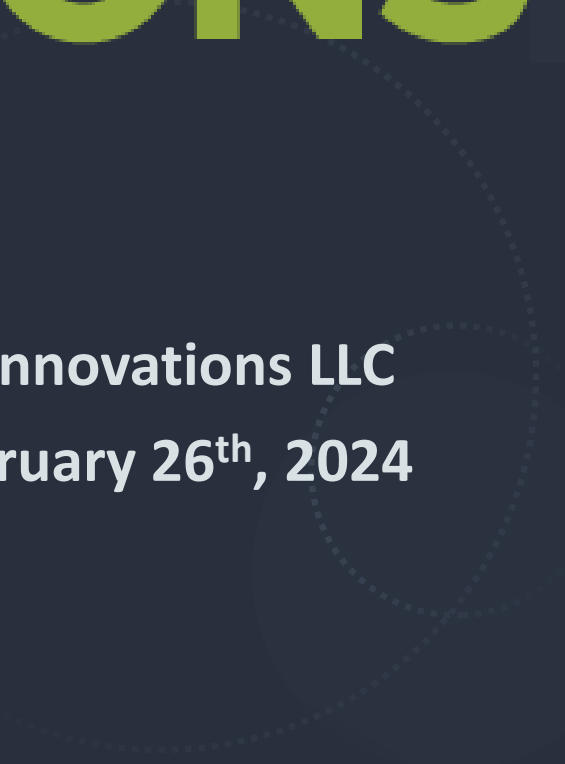


# INNOVATIONS

Lightning Round

Joseph Spossey – RE Innovations LLC  
DW24 – Monday, February 26<sup>th</sup>, 2024





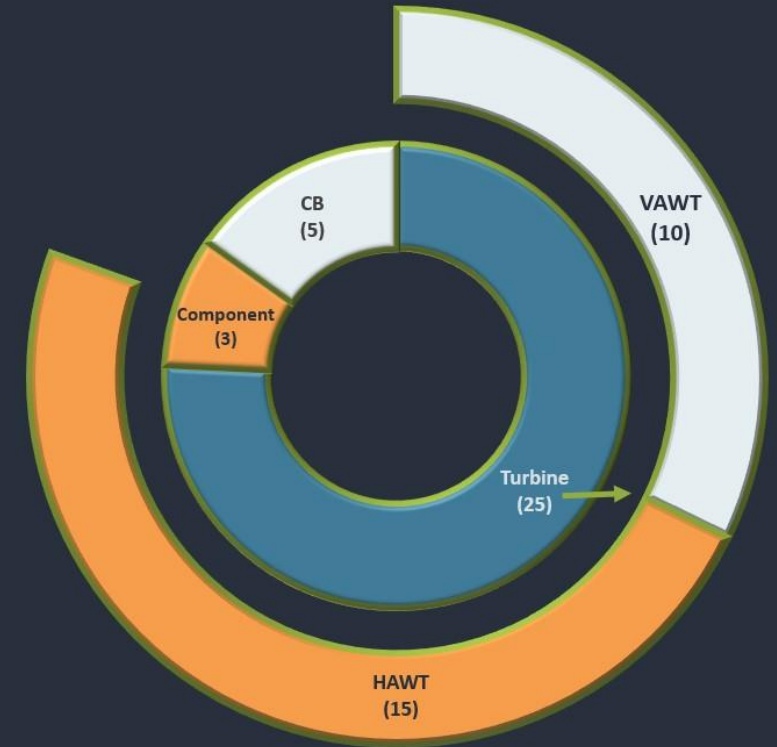
# WHO WE ARE

---

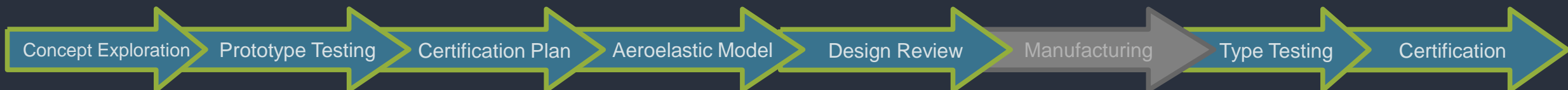
- RE Innovations LLC
  - Wind turbine type testing & certification advisory
  - Formed in April 2019
- 1 Simple Goal → Clear Path to Certification
- My Background
  - 10 years at Intertek, 2009 - 2019
  - 18 years wind turbine related experience
  - Accreditation, International Standardization, Testing, Certification and Advisory Services
  - Currently engaged as MT2 IEC 61400-2 Secretary, MT12 IEC 61400-12-1 Annex H Topic Leader, ARESCA Member, ACP Wind Technical Standards Committee Member and UL STP 6142 Member
  - Customer and 3<sup>rd</sup> party wind turbine type testing expert
- Our Team
  - Network of experienced independent wind professionals
  - Full range of services supporting component and turbine OEMs and designers

# WHAT WE DO

- Distributed Wind Services
  - Certification Plans or Guidance Documents
  - Assistance for, or participation in, grant proposal opportunities such as CIP, SBIR, and others
- Wind Turbine R&D Services
  - DLC Calculations - Simulation Modeling and Simplified Methods for various sizes / archetypes
  - Power Curve and Annual Energy Production Determination
  - Electrical Product Conformity and System Specifications
- Standardized & Custom or Prototype Type Testing
- Wind Turbine Certification Support
  - Small Wind Turbines – ACP or IEC 61400-2
  - Medium Wind Turbines – ACP, IEC 61400, and IECRE
  - Design assessments for design conformity
- Certification Project Management
  - Product or System Certification planning, scoping and guidance
  - Gap analysis and documentation assistance
  - Manage / Liaise directly with CB
- Other Services
  - Project / Offshore Wind Turbine Evaluations & Due Diligence
  - Accreditation and Audit Support Services
  - And more!



- 48 Projects in 5 years
- 33 Customers
  - 22 US & Territories / 11 International
  - 13 Current or Previous CIP, SBIR, or other NREL/DOE
  - 1 active NREL Subcontract, SUB-2023-10216
  - **DW Certification Best Practices Guideline is now public, check our website for a direct download of the !!**



# IMPROVED COMPANY WEBSITE

Trusted by leading companies in the renewable energy sector



## Satisfied Customers

Read what our customers have to say about us



REI is the go-to for distributed wind certification consulting.



I was definitely impressed. Joe took the time to ensure he had a good understanding of where we were and what we wanted,



The Re Innovations team has a diverse skill set and I'm sure we'll be using them again throughout our turbine

[www.reinnovationsllc.com](http://www.reinnovationsllc.com)



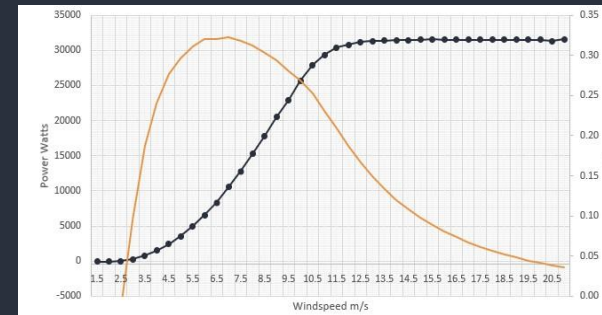
# CURRENT PROJECT

- **Kodair Wind Designs – KW30 & KW20**

- Test site assessment and development in Ireland
- Full Aero Elastic Model
- ACP/IEC Type Testing for ACP 101-1 and IEC Certifications

- **Completed Type Testing**

- KW30 & KW20 Power Performance
- KW30 & KW20 ACP 101-1 Duration



Total Power Production Hours
<b>Complete</b>
Total Normal Operation Hours with Primary Windspeed $\geq 15$ m/s
<b>Complete</b>

- **In Progress Type Testing**

- KW30 & KW20 IEC 61400-2 Duration

Class II	Wind	Power Production Hours Required	Complete / Incomplete
> cut in	n/a	2500	<b>Incomplete</b>
1.2Vave	10.2 m/s	250	<b>Complete</b>
1.8Vave	15.3 m/s	25	<b>Complete</b>
2.2Vave	18.7 m/s	0.16	<b>Complete</b>

# CIP/DOD PROJECTS UPDATE

- **COMPLETED - Sonsight (x2) – CIP Proto Testing (Power and Acoustics) and Aero Model Blade Optimization Study**



- **IN PROGRESS – 90 kW HAWT – DOE CIP Prototype testing**
  - Full ACP 101-1 Type Test Reporting / Electrical Certification Advisory Services
- **IN PROGRESS – 100 kW HAWT – DOE CIP Certification & Listing**
  - UL 1741 Inverter Listing Certification Advisory Services
  - Design, Components and Test Compliance Review
- **IN PROGRESS – 20 kW and 2 kW Novel – Prototype Testing under DOD project**
  - Prototype Design and Testing (x2)
  - Test site development



# NEW PROJECTS

---

- **IN PROGRESS – 80 kW VAWT – Australia**
  - Certification Advisory Services
  - US, EU and AS market evaluations
- **IN PROGRESS – 2.5 kW Novel – Europe**
  - Certification Advisory Services – advisory support
- **IN PROGRESS – 3.7 kW VAWT – Europe**
  - Certification Advisory Services
  - IEC design evaluation
  - Electrical review
  - Type test review
- **IN PROGRESS – 75 kW VAWT – United States**
  - Full ACP 101-1 Test Site Setup and Type Testing
  - Design conformity evaluation
- **IN PROGRESS – 50 kW VAWT – NE United States, Engineering University**
  - Siting and Safety Guidance for Demo Site
  - Training tool for students

# STANDARDS UPDATE

- American Clean Power Association (ACPA)
  - ANSI/ACP 101-1 for turbines up to 150 kW Peak Power; December 2021
  - Amendment 1 for ACP 101-1 to be Submitted to Ballot Q1 '24 to ACP WTSC:
  - **New** reference to IEC 61400-2 for control and protection system design
  - **New** clause clarifying validation test requirements for each size category, within Strength and Safety
- IEC TC88 Maintenance Team 2 (MT2) – Safety of Small Wind
  - Changing our scope and size, we're now "Micro, small and medium wind turbines"
  - **Micro** < 5 m<sup>2</sup>      **Small** > 5 m<sup>2</sup> and < 200 m<sup>2</sup>      **Medium** > 200 m<sup>2</sup> and < 1200 m<sup>2</sup>
  - Reducing **Duration Test**, similar to ACP 101-1
- IEC TC88 MT12 – Maintenance of the IEC 61400-12 Series
  - IEC 61400-12-1 power performance
  - Annex H Small turbines lead
  - Updates including "Medium" turbines as defined in 61400-2
  - Simplified uncertainty analysis, more flexible requirements, and additional clarifications
- UL Standards Technical Panel 6142 – Small Wind Turbine Systems
  - Subcommittee for revision – Task Force
  - Active – ongoing revisions and updates for next release in 2024
  - Ensure up to date requirements for components and subassemblies
  - Update Safety Related Control Systems requirements
  - Clarify Interconnection requirements
  - Update Manual Shutdown requirements and link to ACP 101-1 and 61400-2 shutdown







## WHAT'S NEXT FOR REI?

- Focus on DW inverter certifications and other DG products
- Revise and update DW Certification Guideline in Q4 2024
- ISO/IEC 17025 Accreditation preparations in 2024
- Growth! Are we hiring? Interested in working independently?

A stylized, cartoonish illustration of a wind turbine. The tower is grey with a series of vertical lines. The nacelle is grey and has two large, grey blades extending outwards. The background is dark blue with abstract, colorful shapes in shades of orange, red, and blue, suggesting a sunset or sunrise. The entire graphic is semi-transparent, allowing the text to be overlaid.

THANK YOU FOR YOUR TIME!

QUESTIONS?

**Joseph M Spossey**

**Chief Executive**

**Director – Wind Turbine Testing & Certification  
RE Innovations LLC**

[joseph.spossey@reinnovationsllc.com](mailto:joseph.spossey@reinnovationsllc.com)

[www.reinnovationsllc.com](http://www.reinnovationsllc.com)